AF

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of	Docket No: Q66472
Koji MAEDA , et al.	
Appln. No.: 09/966,288	Group Art Unit: 3753
Confirmation No.: 4172	Examiner: Leonard R. Leo
Filed: October 01, 2001	
For: HEAT EXCHANGER	

REPLY BRIEF PURSUANT TO 37 C.F.R. § 1.193(b)

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 1.193(b), Appellants respectfully submit this Reply Brief in response to the Examiner's Answer dated June 14, 2004. Entry of this Reply Brief is respectfully requested.

POINTS RAISED IN EXAMINER'S ANSWER

A. The Examiner asserts that "[b]y definition, nozzles comprise divergent cross sections at the outlet side thereof."[1] Simply, this is not true. Nozzles may include convergent, divergent, or simply tubular, among other, cross sections at their outlets. The Examiner provides no support for his position that Tsubouchi's nozzles inherently, i.e. must **necessarily**, include divergent cross sections at their outlets. Instead, the Examiner impermissibly reads disclosure into Tsubouchi. On page 5, 1st full paragraph, the Examiner states that "[t]he atomization

[1] Examiner's Answer at page 3, item 10, last paragraph.

disclosed by Tsubouchi et al. occurs by a large pressure difference and a divergent nozzle design." But nowhere does Tsubouchi characterize his nozzles as "divergent" and, in fact, a divergent nozzle is not necessary for producing an atomization. Instead, as shown in US Patent 4,617,898, a copy of which is provided herewith for the Examiner's convenience, a nozzle 39 for atomizing fuel includes a frusto-conical surface 51 converging towards the tubular orifice 50. See Fig. 2, col. 2, lines 4-25, and col. 3, line 65 - col. 4, line 35. Additionally, as shown in US Patent 4,967,964, a copy of which is provided for the Examiner's convenience, an atomizing nozzle 9 includes a central bore 15 and a constricted outlet opening 16. See, for example, Fig. 1, the abstract, col. 2, lines 17-59, and col. 3, lines 51-56.

B. The Examiner completely fabricates a definition of his own volition and erroneously attributes it to Appellants' specification. Specifically, the Examiner states, on page 3 of the Answer, in item 11, 1st paragraph (emphasis in original):

> The functional language in both claims, 'for preventing the liquid fuel drops ... from being mixed with each other' is defined in the specification as drops from the nozzles do not mix or combine **along the surface of the fuel supply plate** to form a larger drop.[2]

Absolutely nowhere in Appellants' specification does there appear such a definition making reference to mixing or combining along the surface of the fuel supply plate. Instead, Appellants' specification describes that due to the structure at the holes in the fuel supply plate, such as chamfers for example, the liquid fuel flowing down through the holes is caused to fall down in the form of drops. Thus, flows of the liquid fuel flowing out from adjacent ones of the holes are prevented from joining each other. See, for example: page 13, 2nd full paragraph; paragraph bridging pages 13 and 14; paragraph bridging pages 25 and 26; page 26, 1st full paragraph; page 27, 1st full paragraph; paragraph bridging pages 27 and 28; page 28, 1st full paragraph; and page 67, lines 17-22. The liquid fuel then passes through fuel channels, such as

[2] See also, the Examiner's Answer at: page 4, lines 17-22; page 5, lines 12-14; page

(23a) and (19a), and carries out heat exchange with the combustion gas so that the liquid fuel is vaporized. See, for example: the paragraph bridging pages 24 and 25; and page 67, lines 14-17.

One aspect of the presently claimed invention is that the fuel supply plate does not spray or diffuse liquid from an opening portion. Instead, plural opening portions are provided in a region corresponding to a whole area of an inlet of a heat exchanging portion and liquid of a uniform amount is flown out from each opening portion. The liquid is not diffused from each opening portion. Furthermore, the opening portions have a shape—in cross section—so as to prevent liquid drops, flown out from adjacent opening portions, from being mixed with each other. The opening portions disclosed in this application don't have a cross-sectional shape for diffusing liquid.

C. With respect to claim 40, the Examiner asserts that the functional language of "for preventing the liquid fuel ... from being mixed with each other" cannot be given patentable weight.[3] However, according to 35 U.S.C. § 112, 6th paragraph, an element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof. Here, claim 40 sets forth "avoiding portions for preventing the liquid fuel ... from being mixed with each other." Although claim 40 does not use the magic language of "means ... for", the term "avoiding portions" by itself does not set forth any specific structure. Accordingly, the "avoiding portions for preventing the liquid fuel ... from being mixed with each other" should be interpreted under §112, 6th paragraph, and thus the functional recitation should be given patentable weight.

D. To the extent that the Examiner's interpretation of claim 40 does not require the avoiding portions to include a diverging chamfer, claim 42 stands or falls separately therefrom for at least the reasons set forth above with respect to the lack of disclosure in Tsubouchi of such a diverging chamfer at the outlet of his nozzles. That is, prior to the Examiner's Answer, the

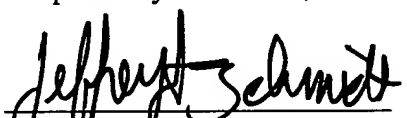
[3] Examiner's Answer at page 5, 2nd full paragraph.

Examiner's reasons for the rejection of all the claims appeared to hinge on his erroneous interpretation of Tsubouchi as inherently including a divergent nozzle. See, for example, the Final Office Action[4] at page 2, 5th paragraph, wherein the Examiner asserted that Tsubouchi's nozzles 41-45 inherently each having a divergent cross section is read as "avoiding means" or "avoiding portions". See also, the Advisory Action mailed on February 24, 2004, "Continuation of 5", last paragraph. Accordingly, due to the Examiner's change in reasoning behind his rejection, Appellants respectfully submit that claim 42 stands or falls separately from the remaining claims presented.

CONCLUSION

For the above reasons as well as the reasons set forth in Appellants' Brief on Appeal, Appellants respectfully request that the Honorable Board of Patent Appeals and Interferences reverse the Examiner's rejections of all claims on Appeal. An early and favorable decision on the merits of this Appeal is respectfully requested.

Respectfully submitted,



Jeffrey A. Schmidt
Registration No. 41,574

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

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CUSTOMER NUMBER

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[4] Mailed on July 30, 2003.